TWO NEW SPECIES OF LARGE *BARBUS* (PISCES, CYPRINIDAE) FROM CENTRAL AFRICA

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SYNOPSIS

Two new species of large *Barbus* from central Africa are described : *Barbus huloti* from the Lake Albert basin and *Barbus humphri* from the Ituri system. *Barbus huloti* is aligned with *Barbus somereni* and *Barbus mirabilis* but the affinities of *Barbus humphri* are uncertain.

INTRODUCTION

During a recent visit to the Institute Royale des Sciences Naturelles, Brussels, I found in the collections two series of specimens labelled *Barbus altianalis* from localities in which this species was unknown. Further examination showed that each series represented a new species. The series from the Vuda River (a feeder stream of Lake Albert) is particularly interesting because it represents only the second known species of large *Barbus* from that lake basin.

Notes on counts and measurements

The standard length (SL) was taken in the usual manner. The lateral line count (LL) was taken from the first pore-bearing scale behind the head to the scale lying lateral to the end of the hypurals. The body depth (D) is the maximum body depth, usually to be found just in front of the dorsal fin. The anterior limit for the head length (H) and snout length (Snt) was the premaxillary symphysis, with the premaxillae retracted. The posterior limit for the snout is the anterior margin of the orbit and for the head length is the most posterior part of the bony edge of the operculum. The term 'mouth width' (MW) refers to the width across the lower jaw at the level of the angle of the mouth. The pectoral fin length (Pct) is the total length of the fin, measured in a straight line from the base of the first fin ray to the distal extremity of the fin. The measurements were taken in this way because of the ease of so doing with dial calipers, which were used on all fish except the smallest, when dividers were used. The caudal peduncle length (CPl) is the horizontal distance from the posterior angle of the base of the last anal ray to the end of the hypurals and the caudal peduncle depth (CPd) is the least depth of that part. The interorbital width (IO) was measured as the least distance between the bony edges of the interorbital space. The eye diameter (I) is the horizontal diameter of the visible part of the eye. Dsp symbolizes the height of the dorsal fin from the base of the first spine to the distal extremity of the longest fin ray. With any measurements which were repeatable on both sides of the fish (e.g. the anterior barbel, Ab,

Bull. Br. Mus. nat. Hist. (Zool.) **30**, 5 *Issued* 28 *October* 1976

or posterior barbel, Pb) the larger was taken except in cases where a deformity was obvious.

The majority of measurements were taken to the nearest millimetre ; the exceptions were some measurements made on small fishes ; these were taken to the nearest half millimetre.

The mean is symbolized by $\bar{x}$, the standard deviation by s.d., the standard error by s.e. and the number of fish in the sample by n.

DESCRIPTION OF SPECIES

Barbus huloti sp. nov.

HOLOTYPE. The holotype is a fish of 140 mm SL, no. 13289.558 in the collections of the Institute Royale des Sciences Naturelles, Brussels. Ten specimens *ex* no. 13288 are paratypes, as is BMNH.1975.4.30 :1. These fishes were collected by M. Hulot on 4 August 1953 at Zega on the Vuda River, Lake Albert (=Lake Mobuto Sese Seko) basin, Zaire, 1°44'N, 30°45'E.

DESCRIPTION. The description is based on 36 specimens, 68–282 mm SL.

	n	$\bar{x}$	s.d.	s.e.	range
SL	–	–	–	–	68 -282 mm
D	35	28·1	1·8	0·3	25·0–33·7
H	36	27·5	1·3	0·2	22·6–29·4
I	36	6·4	0·8	0·1	4·2– 7·9
IO	36	7·8	0·7	0·1	6·6– 9·6
MW	35	6·5	0·6	0·1	5·8– 8·2
Pct	36	22·5	1·4	0·2	19·5–26·1
CPl	36	16·9	1·3	0·2	13·3–19·1
CPd	36	11·9	0·6	0·1	10·8–13·5
Snt	36	8·6	0·9	0·1	6·3–10·0
Ab	36	6·1	1·4	0·2	3·1– 8·6
Pb	36	7·3	1·1	0·2	4·8–10·2
Dsp	34	25·4	2·8	0·5	19·1–30·9
S-d	12	49·3	1·5	0·4	46·3–52·8
S-p	12	52·1	1·4	0·4	50·8–55·4

Unless stated otherwise all measurements are expressed as a percentage of the standard length.

The body is compressed and shallow with the ventral profile gently convex from the gill isthmus to the anal fin base (Fig. 1). The mouth (Pl. 1) is subterminal or ventral. The lower jaw is long with a curved buccal edge. Usually a thin mental lobe is present but in a few specimens this is greatly reduced, although the lip is always continuous. The skin of the lips, snout, base of the barbels and adjacent gular regions has a velvety texture caused by large numbers of minute papillae.

Sections were cut of the papillae but the state of preservation of the tissues was inadequate for detailed histological examination. The larger specimens (above about 120 mm SL) have tubercle scars on the skin of the cheeks. In a few of the largest fishes two rows of tubercles are present on the anal fin and small scattered

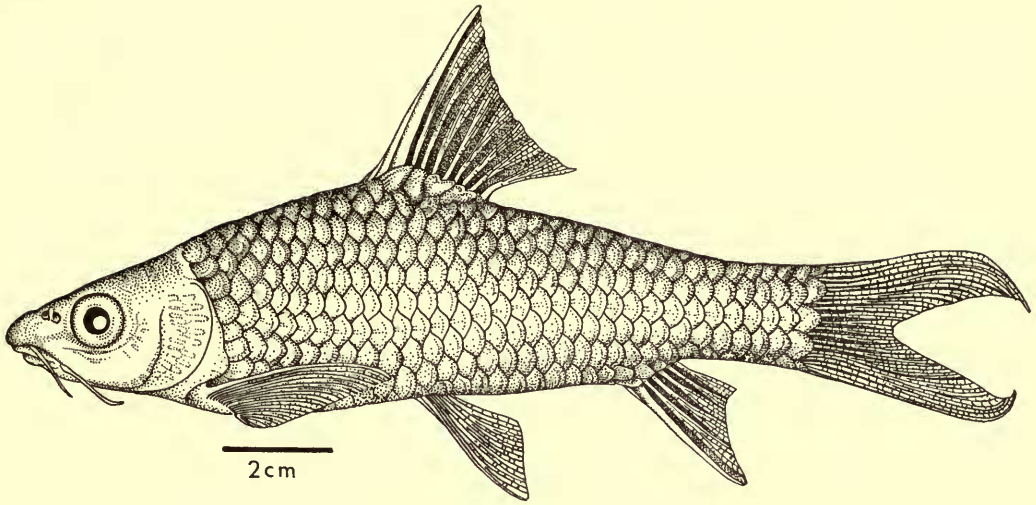

FIG. 1. *Barbus huloti*, holotype, 140 mm SL.

tubercles, or their scars, are present on the top of the head. The eyes are protuberant in most specimens but this may be a post-mortem effect of perhaps the result of the fishes having been collected by dynamiting. A few specimens (see Pl. 1) have a few poorly developed rows of pit organs on their cheeks.

The vertebrae in the twelve specimens radiographed number 18+21 (f1), 19+20 (f3), 19+21 (f4), 20+20 (f3) or 20+21 (f1). This count includes the vertebrae incorporated in the Weberian mechanism.

Dorsal fin. There are 4 unbranched rays and 8 (f7) or 9 (f29) branched rays. The last unbranched ray is thickened into a smooth, straight spine ($\bar{x}=25{\cdot}4$; s.d.$=2{\cdot}8$; s.e.$=0{\cdot}5$; range 19·1–30·9). Most specimens have a sheath of scales covering the bases of the simple rays and the first five or six branched rays. The dorsal fin origin is in advance of the pelvic fin origin.

The *anal fin* has 3 unbranched rays and 4 branched rays (f36).

Squamation. In the lateral line series there are 24 (f2), 25 (f4), 26 (f7), 27 (f11), 28 (f9) or 29 (f3) scales. From the dorsal mid-line to the lateral line there are $4\frac{1}{2}$ (f6) or $5\frac{1}{2}$ (f30) scales and from the lateral line to the mid-ventral line there are $4\frac{1}{2}$ (f15), 5 (f1) or $5\frac{1}{2}$ (f11) scales. Between the lateral line and the base of the ventral fin there are 2 (f1), $2\frac{1}{2}$ (f22) or 3 (f7) scales. Scale counts are not obtainable on all specimens. There are 12 (f36) scales around the least circumference of the caudal peduncle.

The scale striations are disposed radially on the anterior scales but are parallel or slightly convergent on the posterior scales (Fig. 2).

Pharyngeal bones and teeth (Fig. 3). The pharyngeal teeth number 2.3.5–5.3.2 in all the 12 specimens examined. There is no significant change in the shape of the pharyngeal teeth with an increase in the size of the fish. The second tooth of the inner row is always mammiliform and never develops a molariform crown. The

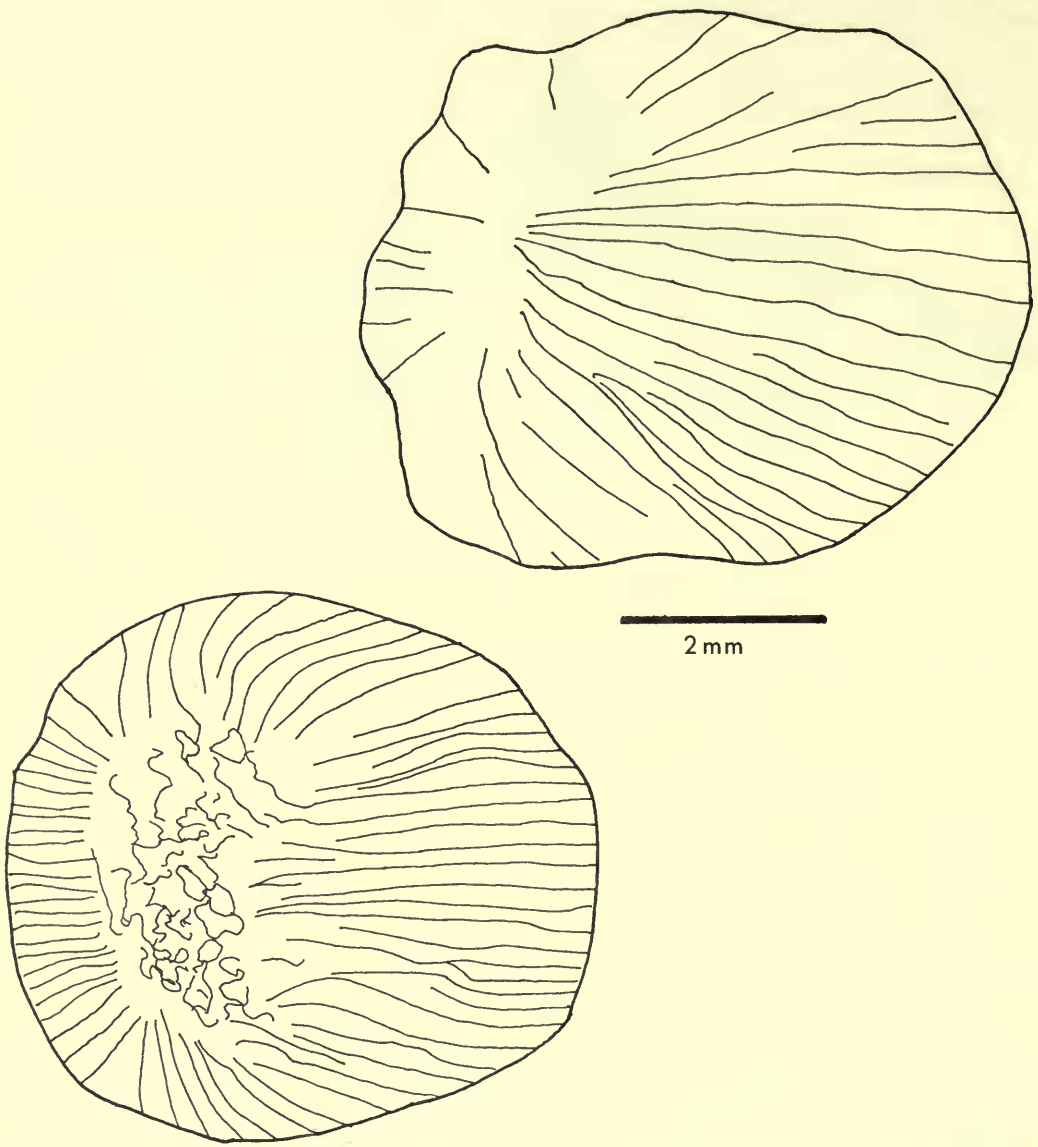

FIG. 2. *Barnus huloti*, scale striations. Above, the third scale from the row above the lateral line ; below, the fifteenth scale from the same row.

mean tip-to-tip length of the pharyngeal bones of a specimen of 164 mm SL is 17·0 mm and that of a specimen 216 mm SL is 23·5 mm.

Gill-rakers. In 12 specimens examined there are 10 (f1), 11 (f2), 12 (f3) or 13 (f6) gill-rakers on the lower limb of the first gill-arch. The gill-rakers are slightly curved and obtusely pointed.

Coloration. Alcohol-preserved specimens are dark brown dorsally and paler on the flanks and belly. The centre of each scale is lighter than the edges. Diffuse dark pigment is present in the proximal part of the membrane of all fins. The lateral line is more conspicuous on the caudal peduncle where it is paler than the background.

ETYMOLOGY. This species is named in honour of the collector, M. Hulot.

DISTRIBUTION. This species is known only from pot-holes in the bed of the Vuda River, a feeder stream of Lake Albert, 1°44′N, 30°45′E, Zaire.

DIAGNOSIS AND AFFINITIES. The only other species of large *Barbus* recorded from the Lake Albert basin is *Barbus bynni* (Banister, 1973 : 27). This nilotic

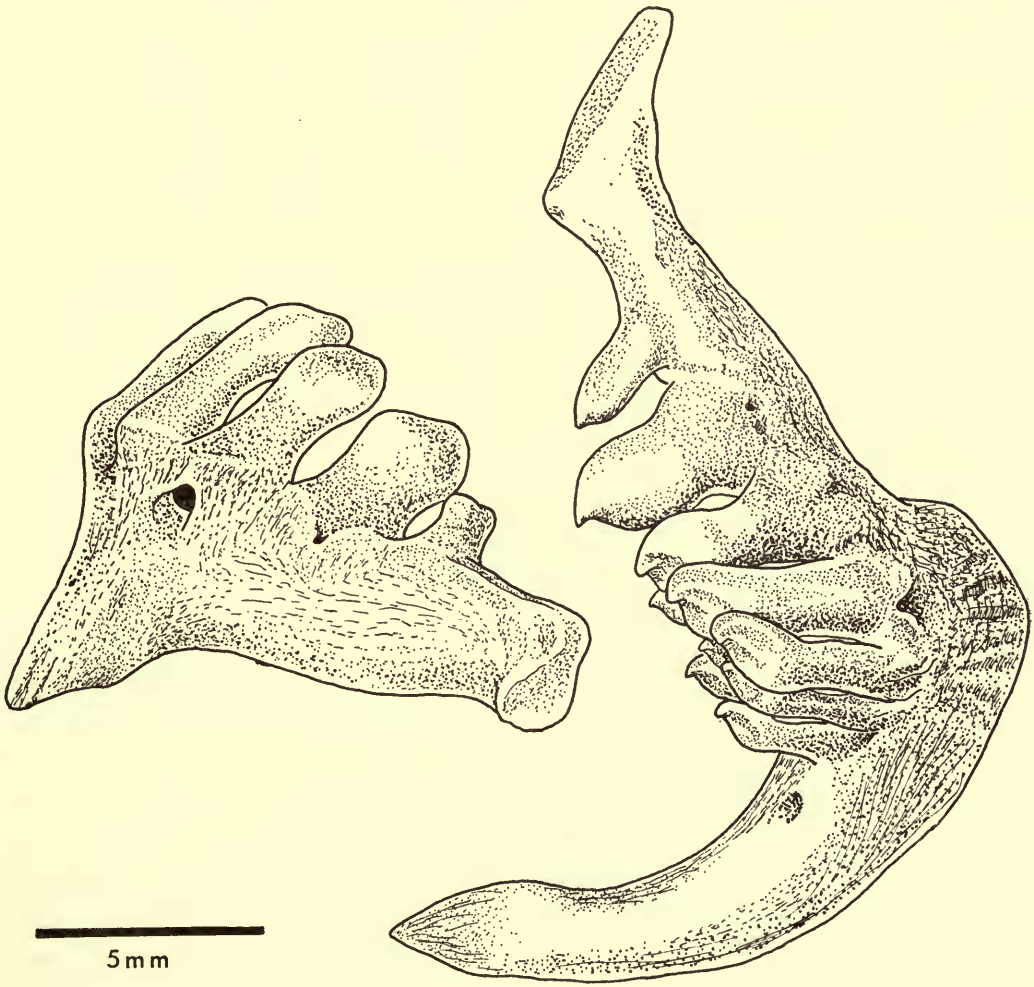

FIG. 3. *Barbus huloti* : left pharyngeal bone of the holotype.

species is, by its massive dorsal spine, deep body and parallel, sinuous striations on the scales, easily distinguished from *Barbus huloti*.

Superficially, *Barbus huloti* resembles *Barbus altianalis*, subspecies of which are found in Lake Victoria (including Lake Kyoga), Lake Kivu and Lakes Edward and George and their feeder streams. Meristic and morphometric differences between the three subspecies are small (see Banister, 1973), but meristic and morphometric data for specimens of two of the three subspecies within the size range of the *Barbus huloti* sample are given in Tables 1 and 2. The main differences between *Barbus*

TABLE 1

Comparisons of the mean and range of certain characters in *Barbus altianalis* and *B. huloti*

	B. a. radcliffii n = 18		*B. a. eduardianus* n = 33		*B. huloti* n = 36	
	$\bar{x}$	range	$\bar{x}$	range	$\bar{x}$	range
SL (mm)		90–282		68–280		68–282
I	7·9	5·0–10·0	8·8	6·4–11·5	6·4	4·2– 7·9
Ab	5·3	3·6– 8·6	4·2	2·2– 6·4	6·2	3·1– 8·6
Pb	6·4	4·5– 9·6	5·7	3·9– 7·7	7·3	4·8–10·2
Dsp	19·9	13·6–30·4	18·9	13·2–25·0	25·4	19·1–30·9

TABLE 2

A comparison of the number of scales in the lateral line series in *Barbus altianalis radcliffii* (B. a. r.), *B. a. eduardianus* (B. a. e.) and *B. huloti* (B. h.)

No. of scales	24	25	26	27	28	29	30	31	32	33	34	35	36
B. a. r.						1	3	5	3		4		
B. a. e.						3	6	2	6	4	4		1
B. h.	2	4	7	11	9	3							

altianalis and *Barbus huloti* are in scale number as well as in the eye, barbel length and length of dorsal spine.

There are, in addition, some less quantifiable differences between *Barbus huloti* and *Barbus altianalis*. The latter species has never been observed to develop tubercles, nor to have papillae around the mouth. The scale striations of *Barbus altianalis* are more or less parallel and their direction does not vary with the position of the scale on the body. The pharyngeal bones and teeth of *Barbus altianalis* vary in shape and size (with the diet), a phenomenon not yet observed in *Barbus huloti*.

An attempt to explain the absence of *Barbus altianalis* from Lake Albert was made by Banister (1973 : 22) and the arguments given there form an essential background to the current problem. The central part of this problem is to determine the likelihood of *Barbus altianalis* populations having moved from Lake Edward via the Semliki River into Lake Albert in the last 8000–10 000 years. This date coincides with the cessation of the Katwe vulcanicity (Bishop, 1969), an event contemporaneous with the fish extinctions in Lake Edward (Greenwood, 1959; Kendall, 1969). Hitherto there has been no evidence of any faunal interchange via

the Semliki River since that time. This is rather puzzling, especially if the latter river is compared with the Ruzizi River.

The Ruzizi River dates, in more or less its present form, from about 13 000 B.P. (see evidence summarized in Banister, 1973) so that in each case the time scale is of the same order of magnitude. However, the slope of the two rivers is very different ; the Ruzizi drops approximately 590 m in 120 km whilst the Semliki only drops approximately 290 m in 220 km. Yet one fish, *Barilius moori* (see Poll, 1952), is known to have ascended the steeper Ruzizi River. *Barbus altianalis altianalis* has not descended the Ruzizi River into Lake Tanganyika although it has been reported from the Sange River, a tributary of the Ruzizi (Poll, 1952). A known ascent of the Ruzizi River would suggest that current speed alone is unlikely to be a barrier to migration along the gentler Semliki River. Fryer (1968) postulated that cold water flowing down the Ruwenzori mountains into the Semliki may form an effective barrier. However, Beadle (1974 : 139, 177, 181) points out that the main drop in the Semliki River bed is confined to a small distance and he thinks that it is these rapids and not the temperature that are the main barrier to the movement of fishes.

Another factor to consider is the rate of evolution of *Barbus altianalis*. It is assumed that this species was originally confined to the headwaters of the River Zaire before tectonic movements resulted in the formation of the lakes (Banister, 1973). The three subspecies have diverged but little from each other since their initial isolation. The time of their separation and isolation is in the region of 100 000 B.P. (the date of the Bufumbiro volcanoes – see Banister, 1973). Within the three subspecies there is no evidence of a potential for tachytelic evolution such that a population with *Barbus altianalis* characters would manifest *Barbus huloti* characters within 10 000 years. There is no morphological nor palaeozoogeographical evidence that indicates a sufficiently close relationship between *Barbus altianalis* and *Barbus huloti* to justify the inclusion of these species within the same supraspecific complex.

Barbus somereni Boulenger, 1911 and *Barbus mirabilis* Pappenheim & Boulenger, 1914 live in the streams of, respectively, the Ruwenzori mountains and the Ituri system. They both have scales on which the striation pattern differs with the position of the scale on the body. *Barbus huloti* displays the same phenomenon. There are certain characters present in *Barbus huloti* that are not found in the other two species ; these include papillae around the mouth, a long dorsal spine, a slender body and tubercles on the cheeks. *Barbus somereni* and *Barbus mirabilis* both have bulky bodies and a higher modal number of branched rays in the dorsal fin (9 or 10 compared with 8 or 9). The presence of variable scale striation patterns in the three species is regarded as a synapomorphic character indicating that *Barbus huloti* is more closely related to *Barbus somereni* and *Barbus mirabilis* than to Barbus *altianalis*. This character is interpreted as synapomorphic because (a) it is of infrequent occurrence and (b) it is theoretically derivable from the commoner condition of sinuous, parallel striations.

Geographically, there is nothing inconsistent in such a relationship. *Barbus somereni* lives in fast-flowing streams up to altitudes of 1750 m (Greenwood, 1966).

Barbus mirabilis comes from the Ituri River to the west of the rift valley. *Barbus huloti* is found in a fast-flowing feeder stream of Lake Albert on the floor of the rift valley. It was supposed (Banister, 1973) that *Barbus somereni* and *Barbus mirabilis* are the descendants of a once homogeneous population found in the upper reaches of the formerly more extensive Zaire system. *Barbus huloti* could, therefore, represent a segment of this population that became isolated on the floor of the rift valley.

The fishes of the Ituri system are poorly known (see below). The Ituri catchment is largely separated from the Lake Albert catchment area by the scarp wall of the rift valley. Only at the south-west part of the lake and towards the Semliki River is the scarp less severe. There the feeder streams of Lake Albert extend westwards and the relatively low watershed offers the possibility that at some time in the past there may have been movement of fishes between Lake Albert and the Ituri system. *Barbus somereni* has not, to date, been recorded from Ruwenzori streams flowing into the Semliki River.

On the available information I align *Barbus huloti* with *Barbus somereni* and *Barbus mirabilis*. Whether each species represents an isolated population of a widespread ancestral species or whether *Barbus huloti* is an evolved isolated population of one of the other two species cannot, at the moment, be determined.

Barbus humphri sp. nov.

Holotype. The holotype (Fig. 4) is a fish of 145 mm SL, no. 13289.559 in the collections of the Institute Royale des Sciences Naturelles, Brussels. Ten specimens *ex* no. 13289 are paratypes, as is BMNH.1975.4.30:2. These specimens were collected with some 500 others in the River Tabie, North Kivu district, Zaire, about 25 km south of Beni.

Description. The description is based on 12 specimens of 82–214 mm SL.

	$\bar{x}$	s.d.	s.e.	range
SL	–	–	–	82 –214 mm
D	25·8	1·8	0·5	24·0–30·3
H	27·2	1·5	0·4	24·9–30·3
I	5·4	0·8	0·2	4·2– 7·3
IO	7·8	0·6	0·2	6·9– 9·0
MW	6·6	0·7	0·2	5·9– 7·8
Pct	19·4	1·3	0·4	17·3–22·1
CPl	16·2	1·3	0·4	13·4–18·2
CPd	10·8	0·4	0·1	9·7–11·3
Snt	8·7	0·5	0·1	7·9– 9·5
Ab	6·9	1·3	0·4	4·7– 8·8
Pb	7·8	0·9	0·3	6·1– 9·2
Dsp	22·9	1·8	0·9	15·9–28·0
S-d	46·8	1·8	0·5	44·9–50·7
S-p	51·1	1·8	0·5	48·3–54·0

Unless stated otherwise all measurements are expressed as a percentage of the standard length.

The body is shallow, thick and terete. Almost all the specimens have a conspicuous coating of mucus. The snout is blunt with, in larger fishes, a few very

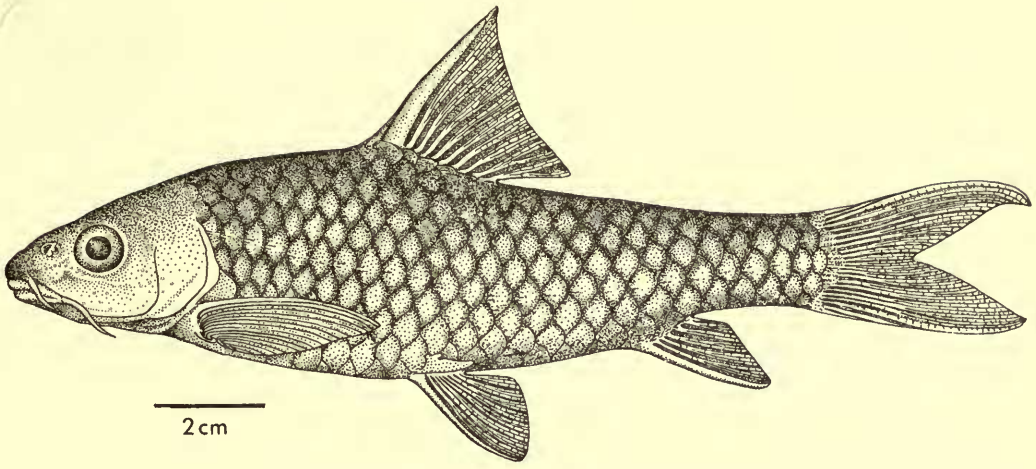

FIG. 4. *Barbus humphri*, holotype, 145 mm SL.

small tubercles on its lateral faces. The horseshoe-shaped mouth is subterminal and has an uninterrupted lower lip. A small mental lobe is occasionally present. The vertebrae in 12 specimens radiographed number 18+21 (f1), 19+19 (f2), 19+20 (f2), 19+21 (f2), 20+19 (f2), 21+18 (f2) or 21+19 (1).

Dorsal fin. There are 4 simple rays (f12), the last of these a stout, rather blunt spine, sometimes shorter than the longest branched rays. A raised sheath of scales is always present at the base of the simple rays, and in a few specimens it extends posteriorly to about the mid-point of the fin. There are 9 (f12) branched rays. The dorsal fin is in front of the pelvic fin origin.

Squamation. In the lateral line series there are 22 (f4), 23 (f3), 24 (f4) or 25 (f1) scales. There are $4\frac{1}{2}$ (f12) scale rows between the dorsal mid-line and the lateral line. Between the lateral line and the ventral mid-line there are $4\frac{1}{2}$ (f12) scale rows. From the lateral line to the base of the pelvic fin there are $2\frac{1}{2}$ (f12) scale rows. There are 12 (f12) scales around the least circumference of the caudal peduncle. The scales bear parallel striations (Fig. 5).

Pharyngeal bones and teeth. The pharyngeal teeth number 2.3.5–5.3.2 in the 12 specimens examined. The first tooth (Fig. 6) of the inner row is small and compressed, i.e. longer than wide (length taken in the plane of the anterior edentulous process, width horizontally at 90° to that plane). The second tooth is also compressed, little enlarged and with a mamilliform crown. The third, fourth and fifth teeth approach a circular cross-section and become progressively more recurved. The teeth of the second and third rows resemble the posterior teeth of the inner row. The mean tip-to-tip measurement of the pharyngeal bones of a fish of 165 mm SL is 12·8 mm and that of a specimen of 214 mm SL is 19·2 mm.

Gill-rakers. In the 12 specimens examined there are 10 (f3), 11 (f8) or 12 (f1) gill-rakers on the lower limb of the first gill-arch. The gill-rakers are scimitar shaped with small conical processes on the leading edge.

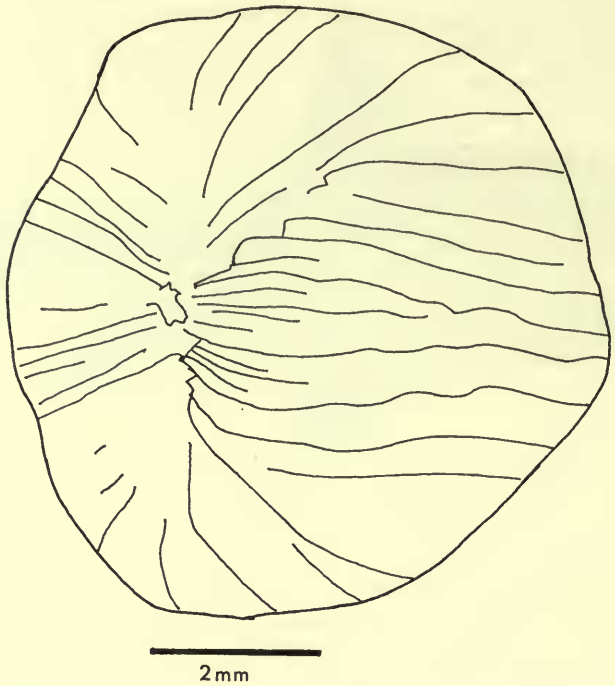

FIG. 5. *Barbus humphri*: fifth scale from the row above the lateral line of a specimen of 145 mm SL.

Coloration. Alcohol-preserved specimens are dark brown above, paler beneath. The scales on the flanks are dark edged. Traces of dark pigment remain on the pelvic, pectoral and anal fins.

ETYMOLOGY. This species is named in honour of Dr P. Humphry Greenwood for his services to African ichthyology.

DISTRIBUTION. This species is known only from the type locality, the River Tabie about 25 km south of Beni, North Kivu district, Zaire.

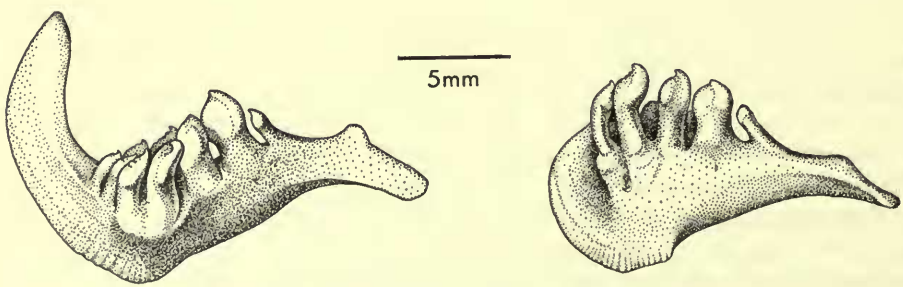

FIG. 6. *Barbus humphri*: left pharyngeal bone.

DIAGNOSIS AND AFFINITIES. The large *Barbus* species of the head waters of the Zaire system are poorly known, especially in the Ituri region. Only four species, *Barbus fasolt* Pappenheim, *Barbus mawambi* Pappenheim, *Barbus mirabilis* Pappenheim & Boulenger, and *Barbus mawambiensis* Steindachner, are recorded from the Ituri region. *Barbus paucisquamatus* Pellegrin and *Barbus longifilis* Pellegrin are known from rivers in the Lowa system to the west of Lake Kivu (and to the south of the Ituri system).

The outstanding feature of *Barbus humphri* is the low number of lateral line scales. *Barbus fasolt* can also be easily distinguished from *Barbus humphri* because it has a flexible last simple ray in the dorsal fin. *Barbus mawambi* has more scales in the lateral line series (29 *fide* Pappenheim & Boulenger, 1914 ; cf. 22–25 in *B. humphri*) and 10 branched rays in the dorsal fin (cf. 9). *Barbus mirabilis* is a bulky-bodied fish with 28 scales in the lateral line series and a variable pattern of striations on the scales (see p. 197).

Barbus mawambiensis, the only other species recorded from the Ituri system, presents a problem. This species was described as *Barbus hindii* var. *mawambiensis* by Steindachner (1911) on the basis of seven, now untraceable, specimens. His description, as well as his determination of this form as a variety of *Barbus hindii*, draws attention to the superficial resemblance between these specimens and *Barbus hindii* (=*Barbus oxyrhynchus*) from the Athi–Tana system in East Africa. The differences given by Steindachner between *Barbus hindii* var. *mawambiensis* and *Barbus hindii* are a deeper caudal peduncle in the former (Cpl/Cpd 1·0–1·9 ; cf. 1·5–1·67) and more (*sic*) scales in the lateral line (21–24) than in *Barbus hindii*. (Boulenger, 1902, gives 25–29 scales in *Barbus hindii*.) This is perplexing information, since the range of the Cpl/Cpd ratios for the four syntypes of *Barbus hindii* was quoted by Boulenger (1902) as $1\frac{1}{3}$–$1\frac{2}{3}$, while my own measurements give a mean of 1·38. The mean Cpl/Cpd ratio for all the *Barbus oxrhynchus* specimens used in an earlier study (n=108) was 1·32 (Banister, 1973). The syntypes of *Barbus hindii* have 25 (f2) or 26 (f2) scales in the lateral line series ; the range for *Barbus oxyrhynchus* is 21–28 scales : 21 (f1), 22 (f10), 23 (f15), 24 (f36), 25 (f30), 26 (f8), 27 (f6) or 28 (f1). Unfortunately, the types of *Barbus hindii* var. *mawambiensis* are untraceable, which prevents the corroboration of Steindachner's data. The specimens were deposited in the Vienna Museum, but a recent search by the curator, Dr Kähsbauer, and myself failed to find them.

In 1912 Steindachner redescribed *Barbus hindii* var. *mawambiensis* as *Barbus mawanbiensis* based on a sample of fish from the Ja River, Cameroon. The spelling (*mawanbiensis*) for the specific name must be regarded as a misprint for *mawambiensis* There are inconsistencies between his 1911 and 1912 accounts, e.g. in 1912 he states that there are fewer scales in the lateral line series of *Barbus mawambiensis* than in *Barbus hindii* – the reverse, but correct, interpretation of the 1911 information. It is, of course, possible that Steindachner muddled scale size with scale number. He does not give the size, nor the number of the specimens examined, merely their locality – the Ja River, Cameroon.

In 1914 Steindachner published another paper on a collection of fishes from the Ja River. Included in this is a further description of *Barbus mawambiensis* based

on (in translation) 'three small examples from the Ja River, via Dr Haberer and from the Ituri via Herr Grauer'. The confusion is further increased by the statement that the largest of the three fishes is illustrated, although the scale on the figure shows that the smallest of the three fish is figured. (Boulenger, 1916, rightly pointed out that on Steindachner's pl. 3, figs 1 and 3 have been transposed.) Tables of measurements for each of the three specimens are given but which specimen or specimens was or were from the Ja River, and which from the Ituri, is not stated. The Ja and Ituri rivers are both in the Zaire system and are tributaries of respectively the Sangha and Aruwimi rivers which flow into the north side of the Zaire some 1000 km apart. Generally, the large *Barbus* spp. are found in the upper reaches of the tributaries, not in the main stream (pers. obs.). The two localities are some 1600 km distant and are separated by a wide sluggish river with few favourable habitats for large *Barbus* spp. Trewavas (1974 : 344) comments that the fauna of the Ja River has much in common with the rivers of Cameroon (therefore not with the Zaire system) and is also of the opinion that Steindachner's *Barbus mawambiensis* from the Ja resemble *Barbus batesii*. Although it is not known which of Steindachner's specimens came from which locality (see above), I agree with Trewavas that the *Barbus* spp. from the Ja are more likely to be related to those of west Africa (e.g. *Barbus batesii*) than to those of central Africa.

Thys van den Audenaerde (1966 : 90) compared the fauna of the upper Ja (above Molundu) with that of the Nyong River and from the faunistic and geographical evidence concluded that the upper part of the Ja had been captured by the Sangha from the upper part of the Nyong. He describes the fauna below Molundu as typically central congolese (= Zairoise). The only information given by Steindachner is that his specimens came from the Molundu district.

It would seem that the presence of the same species of large *Barbus* in the Ituri and Ja rivers is most unlikely and would present some zoogeographical enigmas.

The concept of *Barbus mawambiensis* as based on the points of agreement in Steindachner's three descriptions seems to indicate that there is a species of fish in the Ituri River which superficially resembles *Barbus hindii* but has a low number of lateral line scales. There are two specimens in the collections of the British Museum, nos. 1944.12.4:2–3 collected by Ricardo and Owen in the Epulu River (Ituri system) which have these characters and have been identified as *Barbus mawambiensis*. If this determination is correct then they can be distinguished from *Barbus humphri* by a stronger dorsal spine and a much deeper, more compressed body. These two fish also closely resemble Steindachner's figured specimen. However, the identification of these two fishes must remain tentative until the syntypes of *Barbus mawambiensis* are found.

At the moment I can find no close relatives to *Barbus humphri* ; further collections from the Ituri may help to settle its relationships.

ACKNOWLEDGEMENTS

I am most grateful to M. J. P. Gosse of the Institute Royale des Sciences Naturelles in Brussels for drawing my attention to these fishes and for giving me the opportunity

to examine them. Valuable comments on the manuscript were provided by Drs P. H. Greenwood and P. J. P. Whitehead. Mrs M. Clarke assisted most efficiently with the calculations. The drawings are the work of Miss M. Holloway and Mr G. Howes.

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PLATE 1

Barbus huloti : ventral view of the head of a specimen of 214 mm SL to show the mouth, the papillae and the pit lines on the cheeks.